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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,986	02/10/2004	John F. Yanus	D/A3066	1319

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EXAMINER	
RODEE, CHRISTOPHER D	
ART UNIT	**PAPER NUMBER**
1756	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/775,986	YANUS ET AL.	
	Examiner	Art Unit	
	Christopher RoDee	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,6-18,20-27,30 and 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6-18,20-27,30 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The Finality of the last Office action is withdrawn based on newly discovered art to Otsuka *et al.* in US Patent 5,130,222. Applicants' amendment filed 8 February 2007 has been entered. Prosecution on the merits resumes. All previously applied grounds of rejection are withdrawn based on the amendments to the claims and applicants' remarks.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 6-9, 14-18, 20, 24, 25, 27, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura *et al.* in US Patent Application Publication 2002/0025483 in view of Otsuka *et al.* in US Patent 5,130,222.

Kawamura discloses a photoconductive imaging member comprising, as seen in Figure 4, a conductive support **1**, a charge generating layer **5**, a first charge transport layer **4-1**, and a second charge transport layer **4-2** (¶¶ [0063], [0243], [0244], [0278], [0279]). The charge transport layers contain at least one binder resin and at least one charge transport material (¶¶ [0239], [0241]; Example 5). The second charge transport layer contains a polyurethane, polyester, or polycarbonate resin having a structural unit of the formula (1) (Abstract; ¶ [0041]). The exemplified thickness of the first charge transport layer is 20 μm and 5 μm for the second charge transport layer (Example 5). The charge generation layer is 3 μm. Kawamura also teaches that the charge transport layer can contain an antioxidant (¶ [0294]), such as a

monophenol compound (¶ [0296]). The antioxidant is present in an amount of from 0.01 to 30 parts by weight per 100 parts of the charge transport material (¶ [0311]).

Example 5 produces an imaging member having the two charge transport layers with a binder resin and a charge transport material.

Kawamura does not disclose the imaging member having the specific antioxidant of the claims. However, Otsuka teaches a multiple layer photoreceptor having at least one charge generation layer and at least one charge transport layer, which includes an organic charge transport compound, an antioxidant, and a polymeric binder (col. 2, l. 64-col. 3, l. 1). The antioxidant is given by the formula at column 2, line 15-20, where the R groups are alkyl groups of 3 to 17 carbon atoms, preferably octyl. An exemplified antioxidant in a charge transport layer is 2,4-bis(n-octylthio)-6-(4-hydroxy-3,5-di-tertbutylanilino)-1,3,5-triazine as seen in Example 1.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the antioxidant of Otsuka in the invention of Kawamura because Kawamura calls for an antioxidant in the charge transport layer and Otsuka discloses a specific antioxidant for a photoreceptor having at least one charge transport layer that gives improved durability and prolonged life (Abstract; Table 1).

it would have been obvious to one having ordinary skill in the art at the time the invention was made to place the antioxidant in the second charge transport layer of Kaeamura because the reference's disclosure specifically teaches that antioxidants are usefully included in a charge transport layer. The artisan would have three options when deciding where to put the antioxidant - the first charge transport layer, the second charge transport layer, or both – and given these limited options placement of the antioxidant in the second charge transport layer is well motivated for the worker of ordinary skill in the art.

With respect to claims 6-9, the reference discloses an amount of from 0.01 to 30 parts by weight of antioxidant per 100 parts of the charge transport material (¶ [0311]). Given the disclosure in Example 5 of 3 parts of charge transport material and 5 parts of the polymer binder and the amount of the antioxidant in ¶ [0311], it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an amount of the antioxidant within the disclosure of the reference in order to obtain the environmental resistance benefits disclosed.

Kawamura also discloses various substrate (i.e., support) materials for the imaging member, including plastic films and sheets of paper which would be expected to be flexible (¶ [0247]). The reference discloses phthalocyanines as effective charge generation materials, particularly titanylphthalaocyanine (¶ [0259]). The use of the disclosed support materials or the disclosed charge generation materials would have been obvious because the reference specifically discloses these materials as effective.

Claims 10-13, 21-23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura *et al.* in US Patent Application Publication 2002/0025483 in view of Otsuka *et al.* in US Patent 5,130,222 as applied to claims 1, 6-9, 14-18, 20, 24, 25, 27, 30, and 31 above, in view of Yuh *et al.* in US Patent 6,261,729.

Kawamura and Otsuka were discussed above and the findings of fact and conclusions of law set forth there are incorporated here.

Kawamura does not disclose the specific underlayers of the above rejected dependent claims, as well as the charge generating and charge transporting materials of the rejected dependent claims.

Yuh discloses an imaging member comprising a substrate, a charge blocking layer, and an imaging layer (Abstract). As seen in Figures 1 and 2 these imaging members are provided with an anti-curl layer **1**, a supporting substrate **2**, an electrically conductive ground plane **3**, a charge blocking layer **4**, an adhesive layer **5**, a charge generating layer **6**, a charge transport layer **7**, an overcoating layer **8**, and a ground strip **9** (col. 3, l. 38-47). Useful supporting substrates include those composed of aluminum, polyesters, polycarbonates, polyurethanes, or polyamides (col. 4, l. 45-col. 5, l. 17). The electrically conductive ground plane is present when the substrate is not conductive. This ground plane is a metal such as aluminum or titanium (col. 5, l. 62 - col. 6, l. 32). The substrate maybe rigid or flexible (col. 4, l. 60).

The charge blocking layer is disclosed as a hole blocking layer (col. 6, l. 41-45). This layer contains a phenolic binder having units of a first, second, and third type as depicted in column 7 as well as n-type particles (col. 10, l. 53-59). Preferred n-type particles include titanium dioxide (col. 10, l. 56; col. 11, l. 40-44; Example I), which may be treated with other oxides such as silica (col. 11, l. 65 - col. 12, l. 3). The blocking layer has a thickness of from about 0.0.1 to about 10 microns (col. 10, l. 1-4). Preferred phenolic polymers include VARCUM 29112 (Example I), which is a formaldehyde polymer of ammonia, cresol, and phenol (spec. p. 16, l. 20-21), and DURITE 97 (Example II), which is a formaldehyde polymer of phenol, p-tert-butylphenol, and cresol (spec. p. 16, l. 17-19).

The charge generating layer of the imaging member contains a charge generating pigment, such as a phthalocyanine. Copper phthalocyanine. alumino-chloro phthalocyanine, and hydroxy gallium phthalocyanine are specifically disclosed (col. 13, l. 54 - col. 14, l. 13). This layer has a thickness of from about 0.1 to about 10 microns (col. 14, l. 58-65) and contains about 30 to about 90 weight percent phthalocyanine pigments (col. 14, l. 20-47) and the remainder a binder, such as polycarbonates, polyesters, and polyvinylacetals, among others

(col. 14, l. 14-19). The charge transporting layer contains a charge transport compound, such as N,N'-diphenyl-N,N'-bis(alkylphenyl)-(1,1'-biphenyl)-4,4'-diamine wherein alkyl is selected from the group consisting of methyl, ethyl, propyl, butyl, or hexyl (col. 15, l. 9-42; Example I). The artisan would recognize this compound as a hole transport material. The adhesive layer contains a polyester adhesive with a Mw of from about 50,000 to about 100,000, and preferably about 70,000, and a Mn of preferably about 35,000 (col. 13, l. 25-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the underlayer layer of Yuh in the invention of Kawamura because Kawamura teaches that underlayers are effectively included in the imaging member of that invention and Yuh teaches that underlayers are conventionally used in the art (col. 1, l. 11-18) and discloses a specific underlayer as discussed above that provides improved image quality to copies produced by an imaging member having such a layer. It would also have been obvious to use an adhesive layer as disclosed by Yuh in an imaging member with such a blocking layer because Yuh teaches that this combination ensures adhesion between the blocking layer and overlying the charge generating layer.

Although the art does not disclose Type V hydroxygallium phthalocyanine, the specification acknowledges that this form of hydroxygallium phthalocyanine is well known in the art (see spec. pp. 12-13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a well known form of hydroxygallium phthalocyanine in the invention of Kawamura because Kawamura suggests the use of phthalocyanine and the artisan would look to those forms of the phthalocyanine known to be effective in photognerating layers.

It would also have been obvious to one having ordinary skill in the art at the time the invention was made to use well known charge transporting materials, such as N,N'-diphenyl-

N,N'-bis(alkylphenyl)-(1,1'-biphenyl)-4,4'-diamine wherein alkyl is selected from the group consisting of methyl, ethyl, propyl, butyl, or hexyl, because Kawamura teaches that a broad group of hole transport materials is effective (¶¶ [0220] & [0221]) and Yuh discloses an amine hole transport material effective with phthalocyanine charge generators and blocking layers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on Monday to Thursday from 5:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

cdr
1 March 2007

CHRISTOPHER RODEE
PRIMARY EXAMINER